

S  
354.367  
Z1r  
1964

STATE DOCUMENTS

# Thirty-First Biennial Report

Of The

## STATE ENGINEER



# MONTANA

E. V. Darlinton, State Engineer

MONTANA STATE LIBRARY  
930 East Lyndale Avenue  
Helena, Montana 59601

S  
~~620.002~~  
Z1r  
1964



# Thirty-First Biennial Report

Of The

## STATE ENGINEER



# MONTANA

E. V. Darlinton, State Engineer

SEPTEMBER, 1964



September 18, 1964

The Honorable Tim Babcock  
Governor of Montana  
State Capitol Building  
Helena, Montana

Dear Governor Babcock:

I have the honor to submit herewith the 31st Biennial Report of the Montana State Engineer. This report covers the activities of the State Engineer's office for the biennial period ending July 1, 1964.

Respectfully submitted,

Everett V. Darlinton  
State Engineer

EVD/ba

## TABLE OF CONTENTS

---

	Page
PREFACE .....	iv.
WATER RESOURCES SURVEY.....	1
GROUND WATER .....	3
STREAM MEASUREMENTS .....	3
PROJECTS UNDER 1944 CONTROL ACT.....	6
Missouri River from Fort Benton to Fort Peck, Montana.....	6
Gibson Dam Outlet Works Modification, Montana.....	6
Miscellaneous River Basin Projects.....	6
FLOOD CONTROL, U. S. CORPS OF ENGINEERS.....	6
Flood Control Project for the Town of Musselshell, Montana.....	6
Flood Control for Townsend, Montana.....	7
Flood Control at Saco, Montana.....	7
WATER WELL CONTRACTORS EXAMINING BOARD.....	7
COMPACTS .....	7
Yellowstone River Compact.....	7
Columbia Interstate Compact.....	8
St. Mary and Milk Rivers.....	8
INTER-DEPARTMENTAL ADVISORY COUNCIL ON NATURAL RESOURCES & DEVELOPMENT.....	8
STATE WATER POLLUTION COUNCIL.....	9
COORDINATING COMMITTEE ON MISSOURI RIVER MAIN STEM RESERVOIR OPERATIONS.....	9
RESERVOIR CONTROL COMMITTEE, CANYON FERRY AND TIBER RESERVOIRS .....	10
HYDROLOGY SUBCOMMITTEE — COLUMBIA RIVER.....	10
WATER MANAGEMENT SUBCOMMITTEE — COLUMBIA RIVER...	10
STATE WATER CONSERVATION AND PLANNING BOARDS.....	10
INTERNATIONAL PROBLEMS .....	10
INSPECTION OF DAMS.....	11
IRRIGATION DISTRICTS .....	11
MISCELLANEOUS .....	11

## PREFACE

This, the 31st Biennial Report of the State Engineer, covers the activities of his office for the period ending July 1, 1964.

The State Engineer's Office was created in 1903 to assist in the formation of irrigation districts and to become conversant with the State's water resources. Therefore, the State Engineer's primary function is to administer Montana's water although, in addition, he is a member of the commissions of the State Planning Board, the State Water Conservation Board, the Water Pollution Council, the Water Well Contractors Examining Board, and the Governor's Interdepartmental Advisory Council on Natural Resources. The State Engineer also represents Montana on all compacts and agreements concerning waters common to both Montana and other neighboring and downstream states, as well as Canada. These agreements involve the Columbia River Basin with its 7 states, the Missouri River Basin with its 10 states, the Hudson Bay Drainage in Canada, and the Yellowstone River Compact between Montana and Wyoming. The State Engineer reviews all projects proposed by the U. S. Bureau of Reclamation and the U. S. Corps of Engineers within the State and he is a member of the committee which regulates storage in the Missouri River Main Stem Reservoirs as well as in Canyon Ferry and Tiber. He cooperates with the U. S. Geological Survey in the measurement of stream flows in Montana and, upon complaint, he inspects dams believed to be unsafe and requires corrective action whenever necessary.

As a headwaters state, Montana is blessed with an abundance of water in areas near our major streams since an average of  $25\frac{1}{2}$  million gallons of water per minute (or 41 million acre-feet per year) flow out of the State. This is enough water to irrigate nearly 15 million acres of new land or to supply water to approximately 35 cities the size of New York City! However, much of this water is not in the right place and at the right time. Although  $\frac{8}{10}$  of Montana's land lies in the Missouri River Basin, only  $\frac{4}{10}$  of our surface water is found there, and conversely, only  $\frac{2}{10}$  of our land lies in the Columbia River Basin but  $\frac{6}{10}$  of our surface water is there. These figures point-out the major problem of water distribution which confronts Montana, and they illustrate our vital need to conserve water to insure that it will be available in the right place and at the right time! These surface water problems are, of course, equally applicable to our ground-water problems.

## WATER RESOURCES SURVEY

The State Engineer's prime responsibility in the field of "surface" water is to conduct a Water Resources Survey, county by county, throughout the State. This survey was initiated some years ago because records of our surface water rights were so confused and difficult to find. This confusion came about as the result of our antiquated surface water laws which allow a person to appropriate water from our streams in several different ways. If a stream is unadjudicated, the appropriator can build a ditch and divert the water he needs, hoping that no one objects or starts court action against him, or he can post a notice of intention to divert water at the point of diversion on the stream and within 20 days thereafter file an appropriation in the local Courthouse and commence construction of his diversion works (however, he must still hope that no one objects). If the stream has been adjudicated, he must petition the Court to reopen the decree and all parties thereto must review his request for water before a decision is reached. Since, on unadjudicated streams, a person is not required to file an appropriation in the Courthouse, the records are far from complete on the actual amount of water used and, in addition, many of the users are unknown.

As a result, it has become necessary to obtain accurate information regarding our use of surface water in Montana in order to protect the rights of each user against the claims of other users as well as to protect Montana against future claims on our water by downstream states or the Federal Government. We obtain this information by having fieldmen in the State Engineer's Office visit each County's Courthouse where they locate, in all sorts of records, whatever information has been filed throughout the years on surface water rights, and we frequently find that some of the existing records are still in one of the State's original counties rather than in the county where the water is being used.

Armed with whatever data they can obtain, the fieldmen spend the summer personally visiting each water user to determine what surface water rights he thinks he has. They also inspect his irrigation works and the land he irrigates and they use aerial photos to locate and describe the irrigated land. Their findings are then checked against the Courthouse records and any necessary adjustments are made. During the winter months, the fieldmen return to Helena, compile the data into useable form, plot maps using aerial photos, and then the State Engineer's Office publishes a full surface water right report on each county. Approximately two counties a year are all that can be covered by our surveys and we now have completed 34 out of the State's 56 counties. **However, after the State has been completed this information will need to be up-dated, especially since Montana is about the only Western State which does not have a law requiring all appropriations of "surface" water to be approved by the State, thereby permitting the State to know how much water is being used and where, when, and by whom, it is being used.**

The following is a list of Montana's counties which have been surveyed to date, together with both the date of publication of the water right report for each county and the number of irrigated acres:

<b>Counties Completed</b>	<b>Date of Report</b>	<b>Acres Irrigated</b>
Yellowstone.....	Oct., 1943 .....	107,405
Carbon.....	May, 1946 .....	97,269
Stillwater.....	May, 1946 .....	34,721
Big Horn.....	May, 1947 .....	65,570
Custer.....	July, 1948 .....	37,343
Rosebud.....	July, 1948 .....	27,376
Musselshell.....	July, 1949 .....	7,929
Golden Valley.....	July, 1949 .....	5,137
Wheatland.....	July, 1949 .....	36,618
Meagher.....	July, 1950 .....	47,575
Sweet Grass.....	July, 1950 .....	56,934
Treasure.....	Dec., 1951 .....	21,231
Park.....	Dec., 1951 .....	63,937
Gallatin.....	Jan., 1953 .....	129,843
Madison.....	July, 1954 .....	111,996
Silver Bow.....	June, 1955 .....	7,006
Deer Lodge.....	June, 1955 .....	21,818
Jefferson.....	June, 1956 .....	26,280
Broadwater.....	June, 1956 .....	42,642
Lewis & Clark.....	June, 1957 .....	38,225
Ravalli.....	June, 1958 .....	104,569
Powell.....	June, 1959 .....	63,262
Granite.....	June, 1959 .....	36,693
Carter.....	June, 1960 .....	44,143
Fallon.....	June, 1960 .....	2,877
Wibaux.....	June, 1960 .....	291
Missoula.....	June, 1960 .....	34,847
Cascade.....	June, 1961 .....	45,978
Powder River.....	June, 1961 .....	33,186
Teton.....	June, 1962 .....	141,014
Judith Basin.....	June, 1963 .....	18,862
Lake.....	June, 1963 .....	111,209
Pondera.....	Being Printed .....	124,618
Chouteau.....	Being Printed .....	13,011
<b>TOTAL.....</b>		<b>1,761,415</b>



## GROUND WATER

The State Engineer is the Administrator of our new Ground-Water Code. This Code concerns the use of underground water but many people confuse the word "ground water" with water that runs on top of the ground and, therefore, they think the Code actually concerns "surface" water.

The 1961 Legislature provided for a period of 2 years after January 1, 1962, for the filing of vested ground-water rights (all ground-water rights possessed **prior** to January 1, 1962, such as water wells, developed springs, drain ditches, sub-irrigation, etc.). Therefore, the deadline for filing on vested ground-water rights was December 31, 1963. However, a person did not lose his vested ground-water rights by failure to file within the 2-year period, although, in the event of a future ground-water dispute, he may be called upon to prove his rights in court.

The only ground-water use which does not need to be filed upon is **minimal household** use as this has an automatic right, but it may be well to file on new wells in this category, nevertheless, since disputes over ground water may arise in the future between users of household water.

It is interesting to note that, based upon experience with a 1957 Ground-Water Law, our office expected to receive between 7,000 and 8,000 "vested right" forms under the new 1961 law. However, during the last two weeks in December, 1963, the filing rush was so great that we received approximately 38,000 "vested right" forms! Needless to say, we haven't compiled nor catalogued the information from all of them yet! Many of the filings are on household wells, streams, and certain springs which actually are not covered by the ground-water law.

Any wells drilled, springs developed, drains dug, or land sub-irrigated after January 1, 1962, **must** be filed upon when completed in order to establish a ground-water right as, otherwise, no right will be recognized.

During this biennium, the State Engineer has been called upon three times to prevent certain parties from either withdrawing ground water or allowing ground water from artesian wells to be wasted because neighboring wells were being adversely affected. Due to various factors, each of these cases was difficult to settle and two of them resulted in quite a financial hardship to the parties who were withdrawing or wasting the ground water. Such problems require the State Engineer to devote considerable time and effort to their solution.

Upon complaint from a number of ground-water users in any area of the State, the State Engineer would be required to: set up a Controlled Ground-Water Area, issue rules and regulations for the withdrawal of ground water therein, and inspect the area to ascertain that his orders were being carried-out. Of course, the rules and regulations could only be developed after a detailed and costly study of ground-water conditions in the Area had been made. During this biennium, the State Engineer was not requested to establish a Controlled Ground-Water Area.

## STREAM MEASUREMENTS

The waters of Montana are one of its most valuable resources and they will continue to add to the economic and recreational growth of the State, if wisely used. This will require ever greater knowledge of the natural quantities available and the effects of water use. The yield of most of the streams of the State must be determined in order to aid in their proper development. The floods of June, 1964, clearly point to the need for information that will lessen or eliminate the damage to roads, dams, bridges, homes and farms. Montana has a responsibility in these matters and the State Engineer is charged with the responsibility of collecting, or having collected, information on the flow of streams in the State.

This responsibility has been mainly discharged, within the limit of funds allocated by the Legislature, through the conduct of a cooperative program of stream gaging with the Water Resources

Division of the U. S. Geological Survey. State and Federal funds are equally matched for a mutually agreed upon program. A part of the program is devoted to water management and interstate matters but the greater part is utilized in maintaining a hydrologic network of basic records needed for agriculture, industry, recreation and other uses. The collection of streamflow records at all points where information is desired is beyond present and probable future economic justification. Reasonably adequate data can be obtained in much of the State by continuous operation of a network of primary gaging stations together with short periods of record collection at secondary sites on the same or other streams. Statistical approaches are then used to project a long-term record for the secondary site. The primary stations may be of either the areal primary type where natural or near natural flow is determined, or of the mainstream primary type where the effect of development on the natural flow of major streams is evaluated.

During this biennium, the State Engineer's cooperative stream-gaging program supported 35 out of a total of 54 areal primary gaging stations in Montana and 23 out of 37 primary stations. The secondary network presently consists of 11 gaging stations, only 4 of which are supported by the State Engineer. There is no general standard as to the number that should be operated at any given time. A secondary gaging station may be operated for 7 to 10 years, by which time, correlation to one or more primary gaging stations can be established. The secondary record is then discontinued and salvageable facilities can be reinstalled at another new secondary site. There are 9 gaging stations which fall into the water-management class and the State Engineer's support on these stations varies from about one-half on the Yellowstone River Compact stations (jointly supported by Wyoming) to only about \$200 per station on those for which the U. S. Corps of Engineers, Omaha District, provides most of the operating funds.

To Supply some information on small streams where a full gaging station is not now justified, a partial record approach is used. This may consist of a few measurements of discharge to observe the effects of summer lows and a determination of the annual peak. At a few sites, peak flow only is determined. These partial records are designed to provide information on the low-flow potential and/or flood flow for spillway capacities.

There are numerous private and public reservoirs in the State which regulate the flow of streams for irrigation, and a knowledge of their contents at each month's-end, compiled over a period of years, is quite essential. The State Engineer's cooperative program aids in the collection, assembly and publication of this data at an annual cost of approximately \$50 per reservoir.

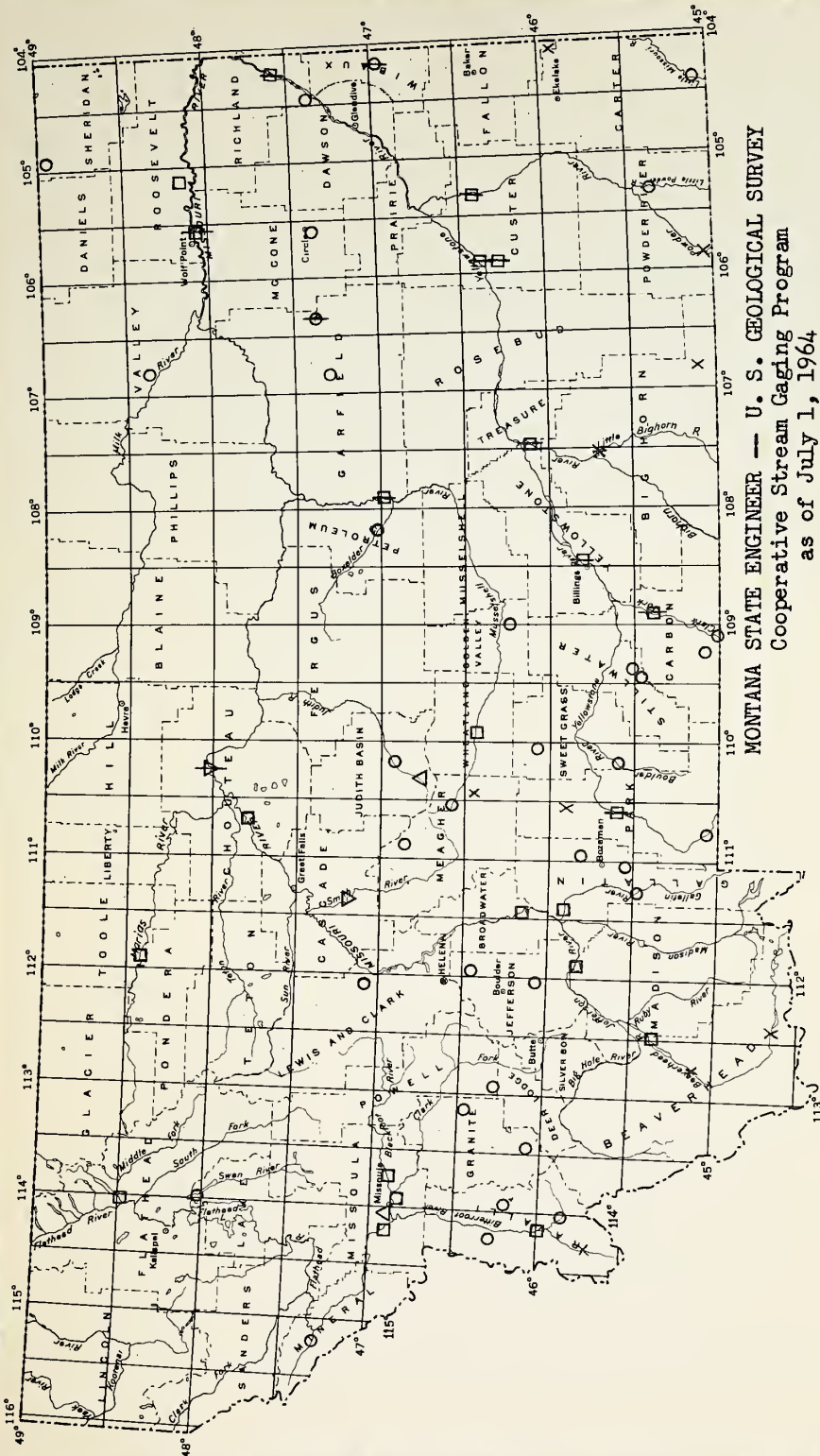
A breakdown of expenditures for the State Engineer's cooperative stream gaging program with the U. S. Geological Survey, in each year of the biennium, is given below:

56 full-support continuous gaging stations at \$900 per year.....	\$50,400
9 partially supported gaging stations.....	2,000
Yellowstone River Compact gaging stations and report.....	4,500
6 low and peak flow partial records.....	1,200
8 peak flow gages on small streams.....	800
22 reservoir records assembled and compiled monthly .....	1,100
Total State and Federal Cost.....	<u>\$60,000</u>
State Engineer's Contribution.....	\$30,000

The gaging stations are shown on the accompanying map (Fig. 1) by type or classification and location. To avoid clutter, the partial record, peak flow, and reservoir records are not shown.

# MONTANA

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



Full Support	Partial Support	Classification
○	◊	Areal Primary
□	◐	Mainstream Primary
△	◑	Areal Secondary
▽	◒	Mainstream Secondary
×	×	Water Management

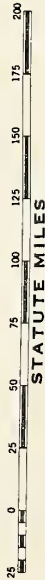


Figure 1

Partial record, peak flow, and reservoir records are not shown.

## PROJECTS UNDER 1944 FLOOD CONTROL ACT

The Flood Control Act (58 Stat. 887) passed by Congress on December 22, 1944, provides that whenever a project is submitted to Congress for authorization, it shall have been previously reviewed by each state in the major basin and written comments on the project submitted by each state. Therefore, Montana reviews any projects proposed in the Columbia River Basin or the Missouri River Basin. Under this Act, the State Engineer has been called upon to review the following projects during this biennium:

**Missouri River from Fort Benton to Fort Peck, Montana**—Federal agencies consisting of the U. S. Corps of Engineers, the U. S. Bureau of Reclamation, the U. S. Geological Survey, the U. S. Bureau of Mines, the U. S. Bureau of Land Management, the National Park Service, and the U. S. Fish and Wildlife Service prepared a joint report on the development of the Missouri River in Montana between Fort Benton and Fort Peck. Eleven different plans were submitted which vary from a proposal to keep this reach of the river in its present wild state by designating it a National Wilderness Waterway, to a proposal for a 365 ft. dam at Cow Creek and a 192 ft. dam several miles upstream from the city of Fort Benton. A proposed bird refuge (known as Fort Hawley) in the Malta area was included in each plan. Project Costs for each plan varied from a low of \$31 million to a high of \$441 million. Public Hearings on these proposals were held by the Federal agencies in Lewistown, Havre and Malta, Montana, and the State Engineer attended all three meetings. Numerous other special meetings on these plans were also attended by the State Engineer.

**Gibson Dam Outlet Works Modification, Montana**—The U. S. Bureau of Reclamation has proposed that the valves on the existing outlet works of Gibson Dam, Sun River Project, be modified and that additional outlet works be installed in order to allow 7,500 cubic feet per second of water to be passed from the reservoir rather than the present 2,500 cubic feet per second. The State Engineer approved these plans and since then, the disastrous floods of June, 1964, have drastically emphasized this need.

**Miscellaneous River Basin Projects**—Proposed water projects in neighboring states which were reviewed during this biennium by the State Engineer's Office and approved, since they did not affect Montana's water supply, were the following: the Tualatin Project in Oregon, the Chelan Division, Chief Joseph Dam Project in Washington, the Kennewick Division Extension, Yakima Project in Washington, and the Lower Teton Division, Teton Basin in Idaho.

## FLOOD CONTROL, U. S. CORPS OF ENGINEERS

The Flood Control Act also provides that the Corps of Engineers, U. S. Army, may build small projects without congressional authorization. The Corps, however, requires approval of local authorities and the State. The following projects in this category were reviewed by the State Engineer during this biennium:

**Flood Control Project for the Town of Musselshell, Montana**—Musselshell is laid out in a rectangular pattern and covers an area of about 40 acres. The Musselshell River flows in a general northeast direction parallel to the northern boundary of the town. Hawk Creek flows northward along the western edge of town to join the Musselshell River near the northwestern corner of town. Flooding at Musselshell is caused primarily by high intensity localized rainfall in the Hawk Creek Basin lying to the south of town. The town has not suffered damage due to flooding from the Musselshell River, but it sustains rather severe flood damage from Hawk Creek. In recent years, the Musselshell River has been eroding an area at the northwest corner of the town. In May, 1962, during a flood on Hawk Creek, the weakened right bank area was breached, changing the location of the mouth of Hawk Creek. It is highly probable that if this erosion were allowed to continue unabated, it would pirate an old Hawk Creek chute in the northwestern part of town and would de-

stroy 4 homes and 8 outbuildings. In order to protect the town of Musselshell, the U. S. Corps of Engineers proposes to build a levee and channel improvements and appurtenant works. The cost of this project is estimated at \$33,500 of which \$2,000 would be provided by local interests. The State Engineer approved this project and it has been approved by the Chief of Engineers, U. S. Corps of Engineers, subject to the availability of funds.

**Flood Control for Townsend, Montana**—The State Engineer attended a hearing in Townsend, Montana regarding the periodic flooding of the Missouri River at Townsend. The U. S. Corps of Engineers has proposed the construction of a levee near town to correct this condition but local people feel that they should not be called upon to participate financially in this project since they believe that the construction of Canyon Ferry Dam has caused the flooding problem.

**Flood Control at Saco, Montana**—The State Engineer attended a public meeting called by the U. S. Corps of Engineers at Saco to learn the wishes of the local citizens regarding a possible flood control project on Beaver Creek near Saco. Beaver Creek frequently floods during the spring runoff and causes damage to lands surrounding the town of Saco. Considerable interest was shown in having such a project investigated.

## WATER WELL CONTRACTORS EXAMINING BOARD

The 1961 State Legislature provided for the licensing of all water well drillers who contract to drill water wells for compensation on land other than their own in Montana and who drill wells to a depth greater than 25 feet. A three-member Board administers this Act and polices it as adequately as fees obtained from the licensed well drillers will permit. Board members are the State Engineer, the Director of Environmental Sanitation—State Board of Health, and a reputable member of the water well drillers who is appointed by the Governor. During this biennium, several water well drillers objected to taking an examination, posting a bond, and paying a licensing fee as provided by law, and they caused the Board members considerable difficulty in investigating each case and forcing compliance with the statutes. One case advanced to the courts but the driller became licensed just prior to trial. The Board has employed a temporary inspector each summer to travel throughout the State investigating well drillers and their complaints in order to enable the Board to properly police the Act. At present there are 129 licensed well drillers in Montana and 116 of them reside within the State.

## COMPACTS

The State Engineer is, by law, Montana's representative in negotiations between the various states and the Federal Government on agreements or compacts regarding interstate waters. However, these agreements must be ratified by the several State Legislatures and by the Congress of the United States in order to become effective.

**Yellowstone River Compact**—Montana's only operating compact is the Yellowstone River Compact between the states of Montana, Wyoming and North Dakota. This Compact provides for the allocation and use between the three states of the waters of the Yellowstone River and its tributaries (except for that part in Yellowstone Park). Briefly, it provides that all water rights perfected prior to January 1, 1950, are vested and are not to be disturbed, but all water filings made after that date are subject to the terms of the Compact. In addition, no water shall be diverted outside the Yellowstone River Basin. The State Engineers of Montana and Wyoming together with the District Engineer of the U. S. Geological Survey serve as the Compact Commission. North Dakota is not required to contribute funds toward the operation of the Compact and it does not have a vote in the meetings. The Federal representative is the Commission Chairman but he has no vote except in the case of a tie.

In order to administer this Compact, it was found necessary to keep a compilation of the water rights filed within Montana and Wyoming after January 1, 1950. Under Wyoming laws such a record has always been readily available but Montana has no provision for recording water right filings with the State. Therefore, the Montana Legislature passed a law which requires all water right appropriations filed in areas of the Yellowstone River Basin affected by the Compact to also be filed in the State Engineer's Office. However, even this Act has proven to be inadequate since these filings only indicate the amount of water claimed by an appropriator and they do not and cannot show proof of the actual amount of water he used (which determines the size of his right). Furthermore, some filings are undoubtedly not forwarded to the State Engineer's Office due to either ignorance of the law or oversight. Therefore, it is now necessary for the State Engineer's Water Resources Survey Division to restudy some of the counties within the Yellowstone River Basin to determine how much water remains for appropriation in Montana under the terms of the Compact in order to evaluate Wyoming's claims to additional water for diversion within Wyoming.

**Columbia Interstate Compact**—This Compact, officially signed by all seven states in the Columbia River Basin, was submitted to their respective legislatures for ratification during this biennium. Five of the seven legislatures ratified the Compact but the states of Oregon and Washington failed to do so. As a result, the Compact is not yet effective and work is continuing on either possible revisions in certain clauses of the Compact or once again pressing for ratification by Oregon and Washington. Recent threats to Idaho's Snake River water by Southern California has generated considerable interest within the downstream states of the Columbia River Basin for such a Compact in order to protect the Pacific Northwest's water resources.

**St. Mary and Milk Rivers**—A January 11, 1909, Treaty, commonly referred to as the Waterways Treaty, was signed between the United States and Great Britain. It was designed to prevent disputes between Canadian and United States citizens regarding boundary waters. One of its provisions establishes an International Joint Commission which has jurisdiction over these boundary waters and another provision relates to the measurement and diversion of the St. Mary River and the Milk River between the State of Montana and the provinces of Alberta and Saskatchewan. Such measurement and apportionment has regularly been made by the proper officials in the United States and Canada under the direction of the International Joint Commission. The Treaty provides that the St. Mary and Milk Rivers are to be treated as one stream for the purpose of irrigation and power and the water shall be apportioned equally between the two countries of the United States and Canada. It was agreed that during the irrigation season the United States is entitled to a prior appropriation of 500 cubic feet per second of water from the Milk River, or  $\frac{3}{4}$ ths of its natural flow, and that Canada is entitled to a prior appropriation of 500 cubic feet per second of water from the St. Mary or  $\frac{3}{4}$ ths of its natural flow. In making such equal apportionment, more than half may be taken from one river and less than half from the other by either country so as to afford a more beneficial use of each.

## INTER-DEPARTMENTAL ADVISORY COUNCIL ON NATURAL RESOURCES & DEVELOPMENT

This Council was established by law for the purpose of studying the natural resources of the State and recommending to the Governor any action or legislation which the Council might deem necessary to further the wise use and development of Montana's natural resources. The Council consists of the following eight ex-officio members: State Engineer, Commissioner of State Lands and Investments, State Forester, Director of the State Fish & Game Department, Secretary of the Grass Conservation Commission, Executive Secretary of the Oil and Gas Conservation Commission, State Highway Engineer, and the Director of the State Bureau of Mines & Geology.

During this biennium, the Council has investigated such subjects as forestry resources, public lands (both State and Federal), water resources, recreation, topographic mapping, mining laws, etc.

Field trips were taken to the Swan River State Forest, to Grazing Districts near Miles City, and to the Butte mines. One of the chief accomplishments of the Council was to assist in changing a decision of the Federal Government which would have removed control of Grazing Districts established on Federal lands from the local citizens to the Federal Government. Topographic mapping needs have also been gathered by the Council and then referred to the U. S. Geological Survey for their consideration.

## STATE WATER POLLUTION COUNCIL

The purpose of this Council is to administer the Water Pollution Act and to guide the State Board of Health in the abatement and prevention of water pollution in Montana. The Council is composed of the following members: State Engineer, Executive Officer of the State Board of Health, Director of the State Fish & Game Department, and four (4) members appointed by the Governor as follows: a representative of industry concerned with the disposal of inorganic waste within the State, a representative of industry concerned with the disposal of organic waste within the State, a representative of agriculture within the State, and a representative of municipal government within the State.

The Council has classified all streams in the State as to their permitted uses and, whenever necessary the Council acting through the State Board of Health, forces municipalities, industries, etc. to provide adequate sewage and effluent disposal facilities. During this biennium, several firms were required to correct improper disposal practices. 105 out of our 137 municipalities now have adequate sewage treatment facilities, 29 need additional sewage facilities and 3 municipalities have no sewage treatment facilities. Of the latter three, two are now planning adequate facilities.

## COORDINATING COMMITTEE ON MISSOURI RIVER MAIN STEM RESERVOIR OPERATIONS

The State Engineer is a member of this committee which was established by the U. S. Corps of Engineers for the purpose of studying both anticipated and actual flows of the Missouri River in order to develop annual operating plans for the River's major reservoirs. Two meetings per year are held in the Reservoir Control Center at the U. S. Corps of Engineers' office in Omaha, Nebraska.

The following table shows, in 1,000 acre-feet, the maximum storage capacity of each main stem reservoir, the dead storage, and the total acre-feet in storage (including dead storage) as of July 1, 1964:

Reservoir	Maximum Storage	Dead Storage	In Storage 7/1/64
Fort Peck .....	19,400	4,500	15,284
Garrison .....	24,500	4,900	14,925
Oahe .....	23,600	5,500	9,429
Big Bend .....	1,900	260	1,526
Fort Randall .....	6,100	1,400	3,734
Gavins Point .....	541	156	414
TOTALS .....	76,041	16,716	45,312

## RESERVOIR CONTROL COMMITTEE, CANYON FERRY AND TIBER RESERVOIRS

The State Engineer is a member of this committee which was established by the U. S. Bureau of Reclamation to regulate the storage in these two reservoirs.

## HYDROLOGY SUBCOMMITTEE—COLUMBIA RIVER

The State Engineer is a member of this Subcommittee which was established under the Columbia Basin Inter-Agency Committee. Its purpose is to study current records on climate, snow surveys, stream measurements, evaporation, historical flows, and all other phases of hydrology which affect the flow of the Columbia River. The Committee is also required to study the geographical locations of all types of gaging stations and to determine the adequacy or insufficiency of such stations. Data obtained by this committee is necessary for the use of the Water Management Subcommittee.

## WATER MANAGEMENT SUBCOMMITTEE—COLUMBIA RIVER

The State Engineer is a member of the Subcommittee which was established under the Columbia Basin Inter-Agency Committee. Its purpose is to maintain an orderly record of the water supply, to decide upon the proper establishment of key gaging stations, and to manage the quantities of water in reservoir storages, so as to reduce floods to a minimum and at the same time plan for a sufficient water supply to meet the needs of power and navigation during an entire season.

## STATE WATER CONSERVATION AND PLANNING BOARDS

The State Engineer is a member of this Subco—member of the State Water Conservation Board and the State Planning Board. The Water Board constructs and maintains irrigation projects throughout the State and the Board collects repayments from the water users for the project costs. The Planning Board encourages the creation of additional jobs for Montanans by means of aiding existing industry to grow and by encouraging new industry to locate within the State. The Board also administers the Federal City-County Planning program for Montana's cities. This program develops plans for the orderly growth and future development of our communities. It is not within the scope of this report to cover the detailed activities of either the State Water Conservation Board or the State Planning Board.

## INTERNATIONAL PROBLEMS

Since a number of streams along Montana's northern (international) boundary originate in Canada and then flow into Montana, problems arise when Canada diverts water for her use. As a result of these diversions, Montana often receives either too little water or it arrives too late. Some of Montana's international streams which have such problems are Sage Creek, Lodge Creek, Battle Creek, and Frenchman Creek. The State Engineer, together with representatives of the Province of Alberta and the U. S. Geological Survey make an annual inspection and report on Sage Creek's operations during the irrigation season. Difficult problems exist on these streams which will require positive action by the International Joint Commission before they can be satisfactorily resolved.



## INSPECTION OF DAMS

Montana law provides that whenever three (3) or more persons, residing below or having property which could be affected by a dam, petition the State Engineer to inspect a dam which they believe to be unsafe, the State Engineer must inspect the dam and require corrective action, whenever necessary. During this biennium, no requests for the inspection of dams were received by the State Engineer. However, during the recent disastrous floods in Northwestern Montana, the State Engineer made an aerial inspection of the Swift damsite and other flooded areas. He provided blueprints and specifications on the original Swift Dam, which was breached by the flood, to the U. S. Corps of Engineers and the U. S. Bureau of Reclamation for their information and study.

## IRRIGATION DISTRICTS

Montana law authorizing the creation of irrigation districts provides that the State Engineer shall submit to the court his written report embodying:

- (1) Engineering features
- (2) Possibility of adequate water supplies
- (3) A copy of the decreed water rights

No irrigation districts were formed during the past biennium. The last district to be formed in Montana was the East Bench Irrigation District which was reported in the 28th Biennial Report of the State Engineer.

## MISCELLANEOUS

In addition to the previously described duties of the State Engineer, he is also a member of several organizations which are devoted to the wise use and development of our water and related resources. These organizations are the Montana Reclamation Association, the National Reclamation Association, the Montana Conservation Council, the Association of Western State Engineers, and the State's Water Task Group for Emergency Planning.





MEMORANDUM  
FOR THE RECORD